

Application No. 10/043,534

Reply to Office Action

*REMARKS/ARGUMENTS*RECEIVED
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The Pending Claims

The pending claims are directed to a system for polishing a substrate, as well a method of polishing a substrate using the polishing system. Claims 1-3, 5, 6, 9, and 11-27 currently are pending.

Discussion of the Claim Amendments

Claim 1 has been amended to more particularly point out and distinctly claim the present invention. In particular, claim 1 has been amended to recite a composition consisting essentially of (i) a liquid carrier, (ii) ammonium oxalate, (iii) a hydroxy coupling agent, (iv) fumed silica, (v) a film-forming agent, and (vi) a polishing pad, wherein the system does not comprise an oxidizing agent. These amendments are supported by the present specification at paragraphs 0008 and 0019. Claim 1 now incorporates the subject matter of claim 10. Accordingly, claim 10 has been canceled. In addition, claim 1 has been amended to delete the limitation that the polishing system has a pH of about 8-12. Claim 11 has been amended to reflect its proper dependency.

Summary of the Office Action

Claims 1-3, 5, 6, 11-13, 15-18, 20-24, 26, and 27 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Motonari et al. (i.e., U.S. Patent 6,447,695) (hereinafter "the Motonari '695 patent") in view of Sinha et al. (i.e., U.S. Patent 6,551,935) (hereinafter "the Sinha '935 patent"). Claims 9 and 14 stand rejected as allegedly unpatentable over the Motonari '695 patent in view of the Sinha '935 patent and further in view of Allman et al. (i.e., U.S. Patent 6,541,383) (hereinafter "the Allman '383 patent"). In addition, claims 19 and 25 stand rejected as allegedly unpatentable over the Motonari '695 patent in view of the Sinha '935 patent and further in view of Ni (i.e., U.S. Patent 6,503,766) (hereinafter "the Ni '766 patent").

Discussion of the Obviousness Rejections

In rejecting the pending claims on obviousness grounds, the Office Action relies on the Motonari '695 patent for its disclosure of an aqueous dispersion comprising water, an abrasive, and a silane coupling agent (e.g., a hydroxy coupling agent), wherein the aqueous dispersion normally contains no oxidizing agent. The Office Action recognizes that the

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Motonari '695 patent does not specifically disclose using ammonium oxalate in the aqueous dispersion. The Office Action relies on the Sinha '935 patent for its disclosure of a method of using a planarizing solution comprising ammonium oxalate employed in a polishing system further including a polishing pad and abrasives. Since the Sinha '935 patent is directed to a polishing system for polishing metal with an aqueous dispersion, the Office Action alleges that one of ordinary skill in the art would have found it obvious to modify the aqueous dispersion of the Motonari '695 patent to incorporate ammonium oxalate because the Sinha '935 patent discloses that one or more buffers such as ammonium oxalate may be used to adjust the pH of the solution to a desired level.

Contrary to the Office Action's assertions, the Motonari '695 and Sinha '935 patents, taken alone or in combination, fail to disclose or suggest the invention defined by the pending claims. In particular, neither the Motonari '695 nor the Sinha '935 patent, considered separately or combined, discloses a polishing system *consisting essentially of* (i) a liquid carrier, (ii) ammonium oxalate, (iii) a hydroxy coupling agent, (iv) fumed silica, (v) a film-forming agent, and (vi) a polishing pad, wherein the system does not comprise an oxidizing agent, as set forth in the pending claims. Rather, the composition disclosed in the Motonari '695 patent contains additional ingredients which impart properties to the composition that are materially different from the properties of the composition defined by the pending claims. *See PPG Indus. V. Guardian Indus. Corp.*, 156 F.3d 1351 (Fed. Cir. 1998) (holding that the transitional phrase "consisting essentially of" indicates that the claim includes each of the listed elements and any further elements that "do not materially affect the basic and novel properties of the invention").

The Motonari '695 patent teaches that the polishing agent disclosed therein may be inorganic particles or organic particles, or the polishing agent may be organic/inorganic composite particles. The composite particles may be prepared by polycondensation of an alkoxysilane, aluminum alkoxide, titanium alkoxide, or the like in the presence of polymer particles, or by bonding of polysiloxane or the like to the surface of the polymer particles (the Motonari '695 patent at col. 4, lines 18-24). Silica particles or alumina particles may be used instead of an alkoxysilane, presumably in place of the polycondensate formed therefrom (the Motonari '695 patent at col. 4, lines 30-32). The polycondensate may be directly bonded to the functional group of the polymer particles, or the polycondensate may be bonded to the polymer particles via a silane coupling agent (the Motonari '695 patent at col. 4, lines 23-26).

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The polymer particles comprise polystyrene, polymethyl methacrylate, or the like (the Motonari '695 patent at col. 4, lines 20-22).

Thus, the Motonari '695 patent teaches a polishing composition comprising a silane coupling agent *only in conjunction with* a composite particle comprising a polymer *and* a polycondensate or a silica particle, wherein the silane coupling agent serves to bond the polymer and the polycondensate or silica particle. Nowhere in the Motonari '695 patent is there any teaching or suggestion of a polishing composition comprising fumed silica and a hydroxy coupling agent *and not* further comprising polymer particles.

It is well known in the art that the specific nature of abrasive particles present in polishing compositions has a profound effect on the properties of such polishing compositions. As those of ordinary skill in the art readily appreciate, the polishing composition comprising composite abrasive particles disclosed in the Motonari '695 patent has materially different properties from a polishing system comprising silica and a hydroxy coupling agent, *but not* further comprising polymer particles, wherein the polymer particles are bonded to the silica. Such composite particles are excluded by the pending claims since the inclusion of polymer particles would materially affect the basic and novel properties of the present invention.

The Sinha '935 patent fails to cure the deficiencies of the Motonari '695 patent. The Office Action relies on the Sinha '935 patent for its teaching that ammonium oxalate can be incorporated into polishing compositions as a buffer. However, the Sinha '935 patent fails to teach or suggest a polishing system comprising a hydroxy coupling agent, let alone a polishing system consisting essentially of the components as recited in the pending claims. The other references relied on in the Office Action, namely the Allman '383 patent and the Ni '766 patent, do not cure the deficiencies of the Motonari '695 patent and the Sinha '635 patent with respect to a polishing system consisting essentially of the components as recited in the pending claims. Since the combined references fail to teach or suggest all of the limitations recited in the pending claims, the obviousness rejection of the pending claims is improper and should be withdrawn.

Conclusion


Applicants respectfully submit that the patent application is in condition for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the

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prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,


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